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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/044,660	01/09/2002	Paul Brown	287122-00001-1	3144

7590 06/04/2003

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EXAMINER	
MCDERMOTT, KEVIN	
ART UNIT	PAPER NUMBER
3635	

DATE MAILED: 06/04/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 10/044,660	Applicant(s) BROWN, PAUL
	Examiner McDermott, Kevin	Art Unit 3635

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____ .

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-42* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☒ Claim(s) *40 and 41* is/are allowed.

6)☒ Claim(s) *1-3, 6-8, 10-19, 24-27, 29, 30-36* is/are rejected.

7)☒ Claim(s) *4,5,9,20,21,23,28,37-39 and 42* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) *4* .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

DETAILED ACTION

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 24 and 25 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Regarding claim 24, line 2 recites "said metal elements". There is insufficient antecedent basis for this limitation in the claims.

Regarding claim 25, line 2 recites "said compound introduction". There is insufficient antecedent basis for this limitation in the claims.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 1-3, 6, 7, 10-14, 16-19, 26, 27, and claims 24 and 25 as best understood, are rejected under 35 U.S.C. 103(a) as being unpatentable over Rosenberg (U.S. Patent No. 4,285,733) in view of Johnston (U.S. Patent No. 5,071,579) and further in view of Allen.

Regarding claims 1, 16, and 18, Rosenberg discloses in column 1, lines 9-45 a corrosion inhibiting concrete composition comprising a high strength concrete formed

from a hydraulic cement and which contains at least about 2% calcium nitrate therein. Calcium nitrite is a low solubility compound.

Additionally, Rosenberg discloses concretes formed from hydraulic cements are used as structural components in various applications, such as in the formation of roads, bridge deckings, building structures, multistory automobile storage structures and the like. In order to enhance the properties of the concrete to permit its utilization in these manners, the material normally is used in combination with iron or steel reinforcing. The reinforcing is usually in the form of metal rods or bars and is subjected to attack by the various corrosive elements contained in the concrete, as well as by the application of external corrosive elements to the structure, such as chloride salts and the like, which are commonly used in the removal of ice and snow from roads, bridges, pedestrian walkways, and the like. To counteract these corrosive effects, various corrosion inhibiting agents have been proposed for use as admixtures.

Column 4, lines 24-36 disclose combining calcium nitrite with concrete to form a composition which substantially eliminates corrosion to metal pieces contained therein over a sustained period of time and, thus, permits extended life and elimination of repair to concrete formations formed from such compositions.

Column 4, lines 37-50 disclose adding the calcium nitrite to the concrete by various methods. It can be added to cement clinker prior to grinding and can be thoroughly mixed with the cement component during the grinding step. The calcium nitrite can also be added to the dry concrete mixture and can be thoroughly mixed to uniformly disperse it therein. The calcium nitrite can be dissolved in the water which is

used to form the concrete composition. The concrete mixture can be premixed with water and then mixed or contacted with the calcium nitrite. In general, any method of mixing can be used which permits the substantial uniform mixing of the calcium nitrite with the concrete mix prior to its forming a hardened composition.

However, Rosenberg does not disclose attaching the calcium nitrite to a concrete structure.

Johnston relates to products and methods of inhibiting corrosion caused by chloride ions and the like, such a corrosion caused by deicers, acid rains, and the like. Claims 1 discloses a method of inhibiting corrosion caused by chloride ions, in reinforced concrete containing rebars, comprising laying on the surface of a reinforced concrete containing rebars, a corrosion inhibiting system containing at least sodium flourophosphate, and wherein in contact with water the sodium flourophosphate inhibits the corrosion of the rebar.

Allen discloses in figure 7B and in column 15, lines 42 to 65, refurbishing existing deck panels having a bottom portion 54 and an upper layer 56. The upper layer 56 is removed and it is assumed that the upper layer 56 was chloride contaminated and the upper mat 30 of flexural reinforcing material was corroded and causing cracking, spalling and delamination of bridge deck panel 12. After removing layer 56 a continuous cast-in-place concrete topping 57 is then placed over remaining layer 54.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to create an overlay containing at least one compound

capable of sequestering chloride ions and securing the overlay to a concrete structure and then sequestering chloride ions in the overlay.

One of ordinary skill would be motivated to make such a modification to inhibit rebar corrosion caused by chloride ions.

Regarding claim 2, after disposing the concrete of Rosenberg on the concrete layer 54 of Allen, chloride exchange would automatically occur between the concrete layers.

Regarding claim 3, as discussed above, the concrete overlay of Allen is cast-in-place.

Regarding claim 6, the bottom portion 54 of Allen is secured to the concrete topping 57 to establish surface-to-surface contact between the bottom portion 54 and layer 57.

Regarding claim 7, liquid concrete is a slurry. Websters collegiate dictionary – tenth edition defines slurry as a watery mixture of insoluble matter.

Regarding claim 10, the material of Rosenberg is concrete.

Regarding claim 11, a concrete slurry contains water. Water is a high ionic strength liquid.

Regarding claim 12, bridge structures have many components, such as the concrete deck and the piers supporting the deck. The piers are partially submerged in water when the bridge is over a body of water.

Regarding claim 13, Allen discloses the process without using electrical energy.

Regarding claims 14 and 22, Allen discloses in column 12, lines 52-62, the panels being eight inches thick, so that the top and bottom portions are each 4 inches thick. The cast-in-place layer 57 is approximately 4 inches.

Regarding claim 17, Rosenberg's material contains nitrite.

Regarding claim 18, as discussed above, metal reinforcing rods or bars are located within the concrete mix. The reinforcing is the claimed metal elements.

Regarding claim 19, calcium nitrite is capable of liberating nitrite ions.

Regarding claim 24 as best understood, the reinforcing bars of Allen are embedded in concrete.

Regarding claim 25 as best understood, as discussed above regarding Rosenberg, the calcium nitrite may be introduced into the concrete at any point.

Regarding claim 26, as discussed above, the calcium nitrite can be thoroughly mixed in dry form with cement in dry form.

Regarding claim 27, Portland cement includes aggregates. These aggregates qualify as other ingredients added before the water.

Claims 29, 30, 32, 33, 35, and 36 are rejected under 35 U.S.C. 103(a) as being unpatentable over Allen in view of Rosenberg (U.S. Patent No. 4,285,733) and further in view of Johnston (U.S. Patent No. 5,071,579).

Allen discloses in figure 7B and in column 15, lines 42 to 65, refurbishing existing concrete bridge deck panels having a bottom portion 54 and an upper layer 56. Bridges are parts of highways that cross geographic impediments such as rivers and canyons. Bottom portion 54 contains reinforcing bars 20. The upper layer 56 is removed and it is

assumed that the upper layer 56 was chloride contaminated and the upper mat 30 of flexural reinforcing material was corroded and causing cracking, spalling and delamination of bridge deck panel 12. After removing layer 56 a continuous cast-in-place concrete topping 57 is then placed over remaining layer 54.

However, Allen does not disclose the cast-in-place layer 57 containing a compound capable of sequestering chloride ions or using the cast-in-place layer system in a parking garage.

Rosenberg discloses in column 1, lines 9-45 a corrosion inhibiting concrete composition comprising a high strength concrete formed from a hydraulic cement and which contains at least about 2% calcium nitrate therein. Calcium nitrite is a low solubility compound.

Additionally, Rosenberg discloses concretes formed from hydraulic cements are used as structural components in various applications, such as in the formation of roads, bridge deckings, building structures, multistory automobile storage structures and the like. In order to enhance the properties of the concrete to permit its utilization in these manners, the material normally is used in combination with iron or steel reinforcing. The reinforcing is usually in the form of metal rods or bars and is subjected to attack by the various corrosive elements contained in the concrete, as well as by the application of external corrosive elements to the structure, such as chloride salts and the like, which are commonly used in the removal of ice and snow from roads, bridges, pedestrian walkways, and the like. To counteract these corrosive effects, various corrosion inhibiting agents have been proposed for use as admixtures.

Column 4, lines 24-36 disclose combining calcium nitrite with concrete to form a composition which substantially eliminates corrosion to metal pieces contained therein over a sustained period of time and, thus, permits extended life and elimination of repair to concrete formations formed from such compositions.

Column 4, lines 37-50 disclose adding the calcium nitrite to the concrete by various methods. It can be added to cement clinker prior to grinding and can be thoroughly mixed with the cement component during the grinding step. The calcium nitrite can also be added to the dry concrete mixture and can be thoroughly mixed to uniformly disperse it therein. The calcium nitrite can be dissolved in the water which is used to form the concrete composition. The concrete mixture can be premixed with water and then mixed or contacted with the calcium nitrite. In general, any method of mixing can be used which permits the substantial uniform mixing of the calcium nitrite with the concrete mix prior to its forming a hardened composition.

Johnston relates to products and methods of inhibiting corrosion caused by chloride ions and the like, such a corrosion caused by deicers, acid rains, and the like. Claims 1 discloses a method of inhibiting corrosion caused by chloride ions, in reinforced concrete containing rebars, comprising laying on the surface of a reinforced concrete containing rebars, a corrosion inhibiting system containing at least sodium flourophosphate, and wherein in contact with water the sodium flourophosphate inhibits the corrosion of the rebar.

After disposing the concrete of Rosenberg on the concrete layer 54 of Allen, chloride exchange would automatically occur between the concrete layers.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to create an overlay containing at least one compound capable of sequestering chloride ions and use it in the system of Allen on a garage structure.

One of ordinary skill would be motivated to make such a modification to inhibit rebar corrosion caused by chloride ions in any type of reinforced concrete structure.

Claim 15 is rejected under 35 U.S.C. 103(a) as being unpatentable over Rosenberg (U.S. Patent No. 4,285,733) in view of Johnston (U.S. Patent No. 5,071,579) and Allen, and further in view of Rosenberg (U.S. Patent No. 4,092,109).

The disclosures of Rosenberg (U.S. Patent No. 4,285,733), Johnston (U.S. Patent No. 5,071,579), and Allen are discussed above.

However, none of these references disclose the compound added to the concrete being capable of establishing a corrosion resistant layer on metal parts embedded in the concrete.

Rosenberg (U.S. Patent No. 4,092,109) discloses in column 2, lines 23-28, mixing calcium nitrite with concrete so that calcium ions can form a carbonate, which eventually forms a cathodic protection coating on the metal.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to create an overlay containing at least one compound capable of establishing a corrosion resistant payer on metal parts embedded in concrete.

One of ordinary skill would be motivated to make such a modification to inhibit rebar corrosion caused by chloride ions in any type of reinforced concrete structure.

Claim 34 is rejected under 35 U.S.C. 103(a) as being unpatentable over Allen in view of Rosenberg (U.S. Patent No. 4,285,733) and Johnston (U.S. Patent No. 5,071,579), and further in view of Rosenberg (U.S. Patent No. 4,092,109).

The disclosures of Allen, Rosenberg (U.S. Patent No. 4,285,733), and Johnston (U.S. Patent No. 5,071,579) are discussed above.

However, none of these references disclose the compound added to the concrete being capable of establishing a corrosion resistant layer on metal parts embedded in the concrete.

Rosenberg (U.S. Patent No. 4,092,109) discloses in column 2, lines 23-28, mixing calcium nitrite with concrete so that calcium ions can form a carbonate, which eventually forms a cathodic protection coating on the metal.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to create an overlay containing at least one compound capable of establishing a corrosion resistant layer on metal parts embedded in concrete.

One of ordinary skill would be motivated to make such a modification to inhibit rebar corrosion caused by chloride ions in any type of reinforced concrete structure.

Claim 8 is rejected under 35 U.S.C. 103(a) as being unpatentable over Rosenberg (U.S. Patent No. 4,285,733) in view of Johnston (U.S. Patent No. 5,071,579) and further in view of Allen.

The disclosures of these references are discussed above. However, neither of these references discloses applying the concrete overlay as two separate concrete pours.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to make the overlay using two layers made from two separate concrete pours, since it has been held that mere duplication of the essential working parts of a device involves only routine skill in the art. *St. Regis Paper Co. v. Bemis Co.*, 193 USPQ 8.

One of ordinary skill would be motivated to make such a modification to inhibit rebar corrosion caused by chloride ions in any type of reinforced concrete structure.

Claim 31 is rejected under 35 U.S.C. 103(a) as being unpatentable over Allen in view of Rosenberg (U.S. Patent No. 4,285,733) and Johnston (U.S. Patent No. 5,071,579).

However, neither reference specifically discloses using the calcium nitrite on a pier.

Rosenberg (U.S. Patent No. 4,285,733) discloses the calcium nitrite system being used in several types of reinforced concrete construction.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to use the overlay method of Allen using the calcium nitrite concrete mixture of Rosenberg.

One of ordinary skill would be motivated to make such a modification to inhibit rebar corrosion caused by chloride ions in any type of reinforced concrete structure.

Allowable Subject Matter

Claims 4, 5, 9, 20, 21, 23, 28, 37-39, and 42 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The following is a statement of reasons for the indication of allowable subject matter:

Regarding claims 4 and 5, the prior art does not disclose, and it does not appear obvious to modify the prior art to disclose, the method recited in claims 1 and 2, wherein the overlay is pre-cast and then secured to the concrete structure so that ions can be exchanged.

Regarding claim 9, the prior art does not disclose, and it does not appear obvious to modify the prior art to disclose, the method recited in claims 1, 7, and 8 wherein the second concrete layer has a lower porosity than the first concrete layer.

Regarding claim 20, the prior art does not disclose, and it does not appear obvious to modify the prior art to disclose, the method recited in claim 1, wherein the compound is selected from the group of claim 20.

Regarding claims 21 and 23, the prior art does not disclose, and it does not appear obvious to modify the prior art to disclose, the method recited in claims 1 and 2, wherein the compound is selected from the group recited in either claim 21 or 23.

Regarding claim 28, the prior art does not disclose, and it does not appear obvious to modify the prior art to disclose, the method recited in claims 1 and 2, wherein the compound is employed in the reaction recited in claim 28.

Regarding claim 42, the prior art does not disclose, and it does not appear obvious to modify the prior art to disclose, the method recited in claim 1, wherein the compound is employed in the reaction recited in claim 42.

Regarding claims 37-39, the prior art does not disclose, and it does not appear obvious to modify the prior art to disclose, the concrete assembly recited in claim 29, wherein the compound is selected from the groups recited in claims 37-39.

Claims 40 and 41 are allowed.

The following is a statement of reasons for the indication of allowable subject matter:

The prior art does not disclose, and it does not appear obvious to modify the prior art to disclose, a compound capable of sequestering chloride comprising the group recited in claim 40.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Any inquiry concerning this communication or earlier communications from the Examiner should be directed to Kevin McDermott, whose telephone number is 703-308-8266.

5/29/03

Carl D. Friedman
Supervisory Patent Examiner
Group 3600